

FIG. 1

```

<xsd:annotation>
  <xsd:documentation xml:lang="en">
    Product Specification Schema
  </xsd:documentation>
</xsd:annotation>
<!-- All available product specifications -->
<xsd:element name="specifications" type="SpecificationType"/>
<xsd:complexType name="SpecificationType">
  <xsd:sequence>
    <xsd:element name="productSpecification" type="ProductSpecification"
      maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <!-- Specific type of product -->
  <xsd:complexType name="ProductSpecification">
    <xsd:sequence>
      <!-- Characteristics are divided into parameters and accessories -->
      <!-- Parameters define more of the core characteristics of the product. -->
      <xsd:element name="parameters" type="ParameterType" minOccurs="0"/>
      <!-- Whereas accessories are more of add-on optional items -->
      <xsd:element name="accessories" type="AccessoryType" minOccurs="0"/>
    </xsd:sequence>
    <xsd:attribute name="name" type="non-empty-string" use="required"/>
    <xsd:attribute name="uniqueIdentifier" type="xsd:string" use="required"/>
  </xsd:complexType>

```

FIG. 2A

```

<xsd:complexType name="ParameterType">
  <xsd:sequence maxOccurs="unbounded">
    <xsd:element name="parameter">
      <xsd:complexType>
        <xsd:attribute name="name" type="non-empty-string" use="required"/>
        <xsd:attribute name="description" type="non-empty-string" use="optional"/>
        <xsd:attribute name="type" use="required">
          <xsd:simpleType>
            <xsd:restriction base="xsd:string">
              <xsd:enumeration value="java.lang.String"/>
              <xsd:enumeration value="java.lang.Double"/>
              <xsd:enumeration value="java.lang.Boolean"/>
            </xsd:restriction>
          </xsd:simpleType>
        </xsd:attribute>
        <xsd:attribute name="indexedField" use="optional">
          <xsd:simpleType>
            <xsd:restriction base="xsd:string">
              <xsd:enumeration value="true"/>
            </xsd:restriction>
          </xsd:simpleType>
        </xsd:attribute>
        <xsd:attribute name="grooming" use="optional">
          <xsd:simpleType>
            <xsd:restriction base="xsd:string">
              <xsd:enumeration value="translate"/>
              <xsd:enumeration value="numericFormat"/>
              <xsd:enumeration value="trimLeadingZeros"/>
              <xsd:enumeration value="removeMultipleValues"/>
            </xsd:restriction>
          </xsd:simpleType>
        </xsd:attribute>
      </xsd:complexType>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>

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FIG. 2B

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</xsd:attribute>
<xsd:attribute name="emptyValueEqualsNull" use="required">
  <xsd:simpleType>
    <xsd:restriction base="xsd:string">
      <xsd:enumeration value="true"/>
      <xsd:enumeration value="false"/>
    </xsd:restriction>
  </xsd:simpleType>
</xsd:attribute>
</xsd:complexType>
</xsd:element>
</xsd:sequence>
</xsd:complexType>
</xsd:complexType>
<xsd:simpleType name="non-empty-string">
  <xsd:restriction base="xsd:string">
    <xsd:minLength value="1"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:complexType name="AccessoryType">
  <xsd:sequence>
    <xsd:element name="accessory" maxOccurs="unbounded">
      <xsd:complexType>
        <xsd:attribute name="name" type="non-empty-string" use="required"/>
        <xsd:attribute name="description" type="non-empty-string" use="optional"/>
        <xsd:attribute name="type" use="required">
          <xsd:simpleType>
            <xsd:restriction base="xsd:string">
              <xsd:enumeration value="java.lang.String"/>
              <xsd:enumeration value="java.lang.Double"/>
              <xsd:enumeration value="java.lang.Boolean"/>
            </xsd:restriction>
          </xsd:simpleType>
        </xsd:attribute>
      </xsd:complexType>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>

```

FIG. 2C

```

</xsd:attribute>
<xsd:simpleType>
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="translate"/>
    <xsd:enumeration value="numericFormat"/>
    <xsd:enumeration value="trimLeadingZeros"/>
    <xsd:enumeration value="removeMultipleValues"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:attribute name="emptyValueEqualsNull" use="required">
  <xsd:simpleType>
    <xsd:restriction base="xsd:string">
      <xsd:enumeration value="true"/>
      <xsd:enumeration value="false"/>
    </xsd:restriction>
  </xsd:simpleType>
</xsd:attribute>
</xsd:complexType>
</xsd:element>
</xsd:sequence>
</xsd:complexType>
</xsd:schema>

```

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FIG. 2D

300 <xsd:annotation>
 <xsd:documentation xml:lang="en">
 Product Search Configuration Schema
 </xsd:documentation>
 </xsd:annotation>
 <!-- There may be many search configurations, one for each type of product.
 They can be dynamically configured as needed. -->
 <xsd:element name="searchConfigurations" type="SearchConfigurationType"/>
 <xsd:complexType name="SearchConfigurationType">
 <xsd:sequence>
 <xsd:element name="productSearchConfiguration" type="ProductSearchConfigurationType"
 maxOccurs="unbounded"/>
 </xsd:sequence>
 </xsd:complexType>
 <!-- Search configuration for a specific type of product -->
 <xsd:complexType name="ProductSearchConfigurationType">
 <xsd:sequence>
 <!-- Product Characteristics listed here are required to match, regardless of how "close"
 a match is requested -->
 <xsd:element name="requiredToMatch" type="RequiredToMatchType" minOccurs="0"
 maxOccurs="1"/>
 <!-- Default Values to use in search for a characteristic that has no value -->
 <xsd:element name="defaultValues" type="SearchGroupingType" minOccurs="0" maxOccurs="1"/>
 <!-- Transformation of data to "normalize" values -->
 <xsd:element name="transformations" type="SearchGroupingType" minOccurs="0"
 maxOccurs="1"/>
 <!-- Identifies the type of comparison to use on each characteristic -->
 <xsd:element name="comparisons" type="SearchGroupingType" minOccurs="1" maxOccurs="1"/>
 <!-- Assigns a weight to each characteristic. This is used in determining how well a
 "close" match fits. -->
 <xsd:element name="weighting" type="SearchGroupingType" minOccurs="1" maxOccurs="1"/>
 </xsd:sequence>
 <xsd:attribute name="name" type="non-empty-string" use="required"/>
 <xsd:attribute name="percentageOfSuppliedCharacteristicsToMatch" type="percentage"
 use="required"/>

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FIG. 3A

```

304 }</xsd:complexType>
305 }<xsd:sequence>
306 }  <xsd:element name="parameters" type="RequiredParameterType" minOccurs="0" maxOccurs="1"/>
307 }  <xsd:element name="accessories" type="RequiredAccessoryType" minOccurs="0" maxOccurs="1"/>
308 }</xsd:sequence>
309 }</xsd:complexType>
310 }<xsd:sequence>
311 }  <xsd:element name="parameters" type="SearchParameterType" minOccurs="0" maxOccurs="1"/>
312 }  <xsd:element name="accessories" type="SearchAccessoryType" minOccurs="0" maxOccurs="1"/>
313 }</xsd:sequence>
314 }<xsd:complexType name="SearchGroupingType">
315 }<xsd:sequence>
316 }  <xsd:element name="parameters" type="SearchParameterType" minOccurs="0" maxOccurs="1"/>
317 }  <xsd:element name="accessories" type="SearchAccessoryType" minOccurs="0" maxOccurs="1"/>
318 }</xsd:sequence>
319 }<xsd:attribute name="defaultValue" type="non-empty-string"/>
320 }</xsd:complexType>
321 }<xsd:complexType name="SearchParameterType">
322 }<xsd:sequence>
323 }  <xsd:element name="parameter" minOccurs="0" maxOccurs="unbounded">
324 }    <xsd:complexType>
325 }      <xsd:attribute name="name" type="non-empty-string" use="required"/>
326 }      <xsd:attribute name="value" type="non-empty-string" use="required"/>
327 }    </xsd:complexType>
328 }  </xsd:sequence>
329 }</xsd:complexType>
330 }<xsd:sequence>
331 }  <xsd:element name="defaultValue" type="non-empty-string"/>
332 }</xsd:sequence>
333 }<xsd:complexType name="SearchAccessoryType">
334 }<xsd:sequence>
335 }  <xsd:element name="accessory" minOccurs="0" maxOccurs="unbounded">
336 }    <xsd:complexType>
337 }      <xsd:attribute name="name" type="non-empty-string" use="required"/>
338 }      <xsd:attribute name="value" type="non-empty-string" use="required"/>
339 }    </xsd:complexType>
340 }  </xsd:sequence>
341 }</xsd:complexType>

```

FIG. 3B

```

310   </xsd:sequence>
      <xsd:attribute name="defaultValue" type="non-empty-string"/>
      <xsd:complexType>
        <xsd:complexType name="RequiredParameterType">
          <xsd:sequence>
            <xsd:element name="parameter" minOccurs="1" maxOccurs="unbounded">
              <xsd:complexType>
                <xsd:attribute name="name" type="non-empty-string" use="required"/>
              </xsd:complexType>
            </xsd:element>
          </xsd:sequence>
        </xsd:complexType>
      </xsd:complexType>
    </xsd:sequence>
  </xsd:complexType name="RequiredAccessoryType">
  <xsd:sequence>
    <xsd:element name="accessory" minOccurs="1" maxOccurs="unbounded">
      <xsd:complexType>
        <xsd:attribute name="name" type="non-empty-string" use="required"/>
      </xsd:complexType>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
<xsd:simpleType name="non-empty-string">
  <xsd:restriction base="xsd:string">
    <xsd:minLength value="1"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="percentage">
  <xsd:restriction base="xsd:nonNegativeInteger">
    <xsd:minInclusive value="0"/>
    <xsd:maxInclusive value="100"/>
  </xsd:restriction>
</xsd:simpleType>
</xsd:schema>

```

FIG. 3C

400 - <specifications>
 - <productSpecification name="E_Transformer" uniqueIdentifier="indexNumber">
 - <parameters>
 - <parameter name="indexNumber" type="java.lang.String" grooming="trimLeadingZeros"
 emptyValueEqualsNull="true" />
 <parameter name="type" type="java.lang.String" emptyValueEqualsNull="true" />
 <parameter name="designNumber" type="java.lang.String" emptyValueEqualsNull="true" />
 <parameter name="ratedPowerKVA" description="KVA Rating" type="java.lang.Double" indexedField="true"
 emptyValueEqualsNull="true" />
 <parameter name="ratedPowerLv1" type="java.lang.Double" emptyValueEqualsNull="true" />
 <parameter name="ratedPowerLv2" type="java.lang.Double" emptyValueEqualsNull="true" />
 <parameter name="primaryVoltageHv1" type="java.lang.Double" emptyValueEqualsNull="true" />
 <parameter name="primaryVoltageHv2" type="java.lang.Double" emptyValueEqualsNull="true" />
 <parameter name="secondaryVoltageLv1" type="java.lang.Double" emptyValueEqualsNull="true" />
 <parameter name="secondaryVoltageLv2" type="java.lang.Double" emptyValueEqualsNull="true" />
 <parameter name="tappingOnPrimary" type="java.lang.String" emptyValueEqualsNull="true" />
 <parameter name="connectionSymbol" type="java.lang.String" emptyValueEqualsNull="true" />
 <parameter name="impedanceVoltage" type="java.lang.Double" emptyValueEqualsNull="true" />
 <parameter name="typeOfCooling" type="java.lang.String" emptyValueEqualsNull="true" />
 <parameter name="noLoadLoss" type="java.lang.Double" emptyValueEqualsNull="true" />
 <parameter name="loadLoss" type="java.lang.Double" emptyValueEqualsNull="true" />
 <parameter name="maxAmbientTemp" type="java.lang.Double" emptyValueEqualsNull="true" />
 <parameter name="maxTempOfWindingsRise" type="java.lang.Double" emptyValueEqualsNull="true" />
 <parameter name="maxTempOfOilRise" type="java.lang.Double" emptyValueEqualsNull="true" />
 <parameter name="noiseLevel" type="java.lang.String" emptyValueEqualsNull="true" />
 <parameter name="insulationLevelHv1" type="java.lang.String" emptyValueEqualsNull="true" />
 <parameter name="insulationLevelLv1" type="java.lang.String" emptyValueEqualsNull="true" />
 <parameter name="maxAltitude" type="java.lang.Double" emptyValueEqualsNull="true" />
 <parameter name="totalWeight" type="java.lang.Double" emptyValueEqualsNull="true" />

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FIG. 4A

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<parameter name="preliminaryLength" type="java.lang.Double" emptyValueEqualsNull="true" />
<parameter name="preliminaryWidth" type="java.lang.Double" emptyValueEqualsNull="true" />
<parameter name="preliminaryHeight" type="java.lang.Double" emptyValueEqualsNull="true" />
<parameter name="standard" type="java.lang.String" grooming="translate" emptyValueEqualsNull="true" />
<parameter name="frequency" type="java.lang.Double" emptyValueEqualsNull="true" />
<parameter name="noLoadLossTolerance" type="java.lang.Double" emptyValueEqualsNull="true" />
<parameter name="loadLossTolerance" type="java.lang.Double" emptyValueEqualsNull="true" />
<parameter name="totalLossesTolerance" type="java.lang.Double" emptyValueEqualsNull="true" />
<parameter name="standardAccordingToCusISpec" type="java.lang.String" emptyValueEqualsNull="true" />
<parameter name="impedanceTolerance" type="java.lang.Double" emptyValueEqualsNull="true" />
<parameter name="ivWindingMaterial" type="java.lang.String" emptyValueEqualsNull="true" />
<parameter name="hvWindingMaterial" type="java.lang.String" emptyValueEqualsNull="true" />
<parameter name="noiseType" type="java.lang.String" emptyValueEqualsNull="true" />
<parameter name="loadLoss_2" type="java.lang.Double" emptyValueEqualsNull="true" />
<parameter name="primaryVoltageHv3" type="java.lang.String" emptyValueEqualsNull="true" />
<parameter name="tappingOnPrimaryHv2" type="java.lang.String" emptyValueEqualsNull="true" />
<parameter name="tappingOnPrimaryHv3" type="java.lang.String" emptyValueEqualsNull="true" />
<parameter name="costToManufacture" type="java.lang.Double" emptyValueEqualsNull="true" />
<parameter name="productDescription" type="java.lang.String" emptyValueEqualsNull="true" />
</parameters>
<accessories>
    <accessory name="conservator" type="java.lang.String" emptyValueEqualsNull="true" />
    <accessory name="buchholzRelay" type="java.lang.String" emptyValueEqualsNull="true" />
    <accessory name="silicagelBreather" type="java.lang.String" emptyValueEqualsNull="true" />
    <accessory name="doubleContactThermometer" type="java.lang.String" emptyValueEqualsNull="true" />
    <accessory name="safetyValve" type="java.lang.String" emptyValueEqualsNull="true" />

```

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FIG. 4B

```

<accessory name="magneticOilLevelIndicator" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="oilLevelIndicator" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="hvAirInsulatedCableBox" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="lvAirsInsulatedCableBox" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="hvBushing" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="lv1Bushing" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="lv2Bushing" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="paintingSpecification" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="terminalBox" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="oilType" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="electrostaticScreen" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="protectionDevice" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="windingTempIndicator" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="overpressureSwitch" type="java.lang.String" emptyValueEqualsNull="true" />
<accessory name="finishPaintColor" type="java.lang.String" emptyValueEqualsNull="true" />

```

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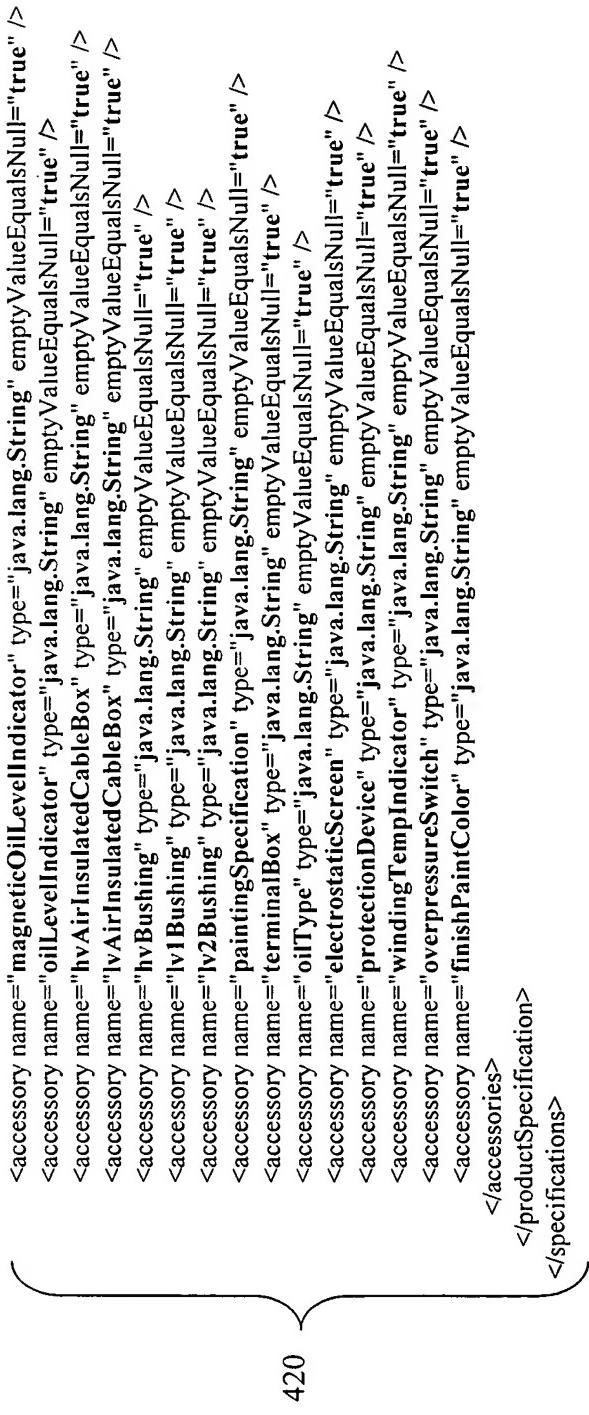


FIG. 4C

```

300   {
      : <searchConfigurations>
        : <productSearchConfiguration name="E_Transformer" percentageOfSuppliedCharacteristicsToMatch="100">
          : <requiredToMatch>
            : <parameters>
              <parameter name="ratedPowerKVA" />
            : </parameters>
          : </requiredToMatch>
        : <defaultValues>
          : <parameters>
            <parameter name="noLoadLossTolerance" value="15" />
            <parameter name="loadLossTolerance" value="15" />
            <parameter name="totalLossesTolerance" value="10" />
            <parameter name="standard" value="IEC011" />
          : </parameters>
        : </defaultValues>
      : <transformations>
        : <parameters>
          <parameter name="tappingOnPrimary" value="CompressSpaces" />
          <parameter name="tappingOnPrimaryHv2" value="CompressSpaces" />
          <parameter name="tappingOnPrimaryHv3" value="CompressSpaces" />
        : </parameters>
      : </transformations>
    : <comparisons defaultValue="ExactMatch">
      : <parameters>
        <parameter name="lvWindingMaterial" value="IgnoreCase" />
        <parameter name="hvWindingMaterial" value="IgnoreCase" />
        <parameter name="totalWeight" value="DoNotExceed" />
        <parameter name="preliminaryLength" value="DoNotExceed" />
        <parameter name="preliminaryWidth" value="DoNotExceed" />
        <parameter name="preliminaryHeight" value="DoNotExceed" />
      : </parameters>
    : </comparisons>
  : </searchConfigurations>
}

```

FIG. 5A

```

    </comparisons>
    = <weighting defaultValue="1">
      <parameters defaultValue="2">
        <parameter name="ratedPowerVA" value="3" />
        <parameter name="ratedPowerLV1" value="3" />
        <parameter name="ratedPowerLV2" value="3" />
        <parameter name="primaryVoltageHv1" value="3" />
        <parameter name="primaryVoltageHv2" value="3" />
        <parameter name="secondaryVoltageLv1" value="3" />
        <parameter name="secondaryVoltageLv2" value="3" />
        <parameter name="connectionSymbol" value="3" />
        <parameter name="impedanceVoltage" value="3" />
        <parameter name="typeOfCooling" value="3" />
        <parameter name="noLoadLoss" value="3" />
        <parameter name="loadLoss" value="3" />
        <parameter name="frequency" value="3" />
        <parameter name="noLoadLossTolerance" value="3" />
        <parameter name="loadLossTolerance" value="3" />
        <parameter name="totalLossesTolerance" value="3" />
        <parameter name="loadLoss_2" value="3" />
        <parameter name="primaryVoltageHv3" value="3" />
      </parameters>
    </weighting>
  </productSearchConfiguration>
</searchConfigurations>

```

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FIG. 5B

```

- <parameters>
  <ratedPowerKva value="800" />
  <ratedPowerLv1 value="800" />
  <ratedPowerLv2 value="" />
  <primaryVoltageHv1 value="11500" />
  <primaryVoltageHv2 value="" />
  <secondaryVoltageLv1 value="420" />
  <secondaryVoltageLv2 value="" />
  <tappingOnPrimary value="+2 -2 2.5%6" />
  <connectionSymbol value="Dyn11" />
  <impedanceVoltage value="6" />
  <typeOfCooling value="ONAN" />
  <noLoadLoss value="1300" />
  <loadLoss value="10000" />
  <maxAmbientTemp value="40" />
  <maxTempOfWindingRise value="65" />
  <maxTempOfOilRise value="60" />
  <noiseLevel value="71" />
  <insulationLevelHv1_AC value="28" />
  <insulationLevelHv1_BIL value="75" />
  <insulationLevelLv1_AC value="3" />
  <insulationLevelLv1_BIL value="0" />
  <maxAltitude value="1000" />
  <totalWeight value="2210" />
  <weightOfOil value="498" />
  <preliminaryLength value="1680" />
  <preliminaryWidth value="1030" />
  <preliminaryHeight value="1530" />

```

```

<standard value="IECOIL" />
<numberOfPhases value="3" />
<frequency value="50" />
<noLoadCurrent value="1" />
<noLoadLossTolerance value="15" />
<loadLossTolerance value="15" />
<totalLossesTolerance value="10" />
<standardAccordingToCustSpec value="" />
<impedanceTolerance value="10" />
<lvWindingMaterial value="AL" />
<hvWindingMaterial value="CU" />
<noiseType value="LPA" />
<loadLoss_2 value="" />
<primaryVoltageHv3 value="" />
- <accessories>
    <accessorie description="Hermetically sealed tank" type="TANK.TANK.HERM" />
    <accessorie description="Porcelain bushings" quantity="4" type="BUSH.BPOR.B001" section="LV1" />
    <accessorie description="Porcelain bushings" quantity="3" type="BUSH.BPOR.B001" section="HV1" />
    <accessorie description="Earthing terminals" quantity="2" type="EART.TERM.A001" />
    <accessorie description="Standard Drain Valve" type="VALV.VLVD.A001" />
    <accessorie description="Adhesive Rating Label" type="TAGS.RATI.STDR" />
    <accessorie description="Rating Plate/Label Fixed" type="TAGS.MNTY.FIXD" />
    <accessorie description="Bi-directional rollers" type="TANK.BASE.ROLL" />
    <accessorie description="5-step off-circuit changer (NLTC)" type="TAPCNG.VCNG.NLS" section="HV1" />
    <accessorie description="05.0051W Std water-based 120-200um" type="SURF.PNTS.PNS1" />
    <accessorie description="Test for alternate accessorie fields" type="LIQ1.LLEV.CINC" />
    <accessorie description="Nynas Nytro 10GBN" type="OIL.OTPU.NYNU" />
</accessories>
</parameters>

```

FIG. 6B